

REMARKS

Claims 1-15 are all the claims pending in the application. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

Claim Rejections - 35 U.S.C. § 112

The Examiner rejected claim 14 under §112, 2nd paragraph, as indefinite. Specifically, the Examiner asserted that it was unclear what was meant by “larger”. Applicants have amended claim 14 in a manner believed to overcome this rejection.

Claim Rejections - 35 U.S.C. § 102

- The Examiner rejected claims 1, 4, 6, 9, and 10-13 under §102(b) as being anticipated by US Patent 5,701,677 to Yamaguchi et al. (hereinafter Yamaguchi). Applicants respectfully traverse this rejection because Yamaguchi fails to disclose each of the elements as set forth in the claims.

Claim 1 sets forth that the stiffness in the yawing direction of the slider in the area where the drive element is provided is higher than the stiffness in the yawing direction of the slider in the area where the drive element is not provided, wherein the difference in stiffness is due to the configuration of the guide elements. Such an arrangement may be accomplished in various exemplary manners as set forth below:

(1) The number of the guide rails in the area wherein the drive element is provided is two, whereas the number of guide rails where the drive element is not provided is less than two, as in Fig. 5B;

(2) The size of the linear guide is made large as described at page 6, lines 16-19 of the specification;

(3) The gap between two bearings provided on the guide rail is made large; and

(4) The combination of the above configurations (2) and (3).

The guide-element recitation as set forth in claim 1 covers at least the above (1-4) configurations. On the other hand, claim 14 corresponds to the configuration (2), and claim 15 corresponds to configuration (3).

Yamaguchi fails to disclose an arrangement wherein the guide elements provide a different stiffness in the yawing direction. In contrast to that set forth in claim 1, Yamaguchi requires ropes in addition to the guide elements in order to restrict the yawing. Accordingly, Yamaguchi is quite different from the presently claimed invention in which the guide element itself restricts the yawing.

The guide elements at both sides of Yamaguchi are clearly the same configuration as each other, and do not satisfy the requirement that the stiffness in the yawing direction of the slider in the area wherein the drive element is provided is higher than the stiffness in the yawing direction of the slider in the area wherein the drive element is not provided, due to the configuration of the guide elements, as set forth in claim 1.

In Yamaguchi, the yawing motion of the movable body is restrained by the attitude stabilizing device. The attitude stabilizing device includes pulleys or ropes, and it is necessary to separately provide the pulley or the ropes.

For at least any of the above reasons, Yamaguchi fails to anticipate independent claim 1. Likewise, this reference fails to anticipate dependent claims 4, 6, 9, and 10-13.

- The Examiner rejected claims 1-11 and 15 under §102(b) as being anticipated by US Patent 6,327,929 to Yanagisawa (hereinafter Yanagisawa). Applicants respectfully traverse this rejection because Yanagisawa fails to disclose all of the elements as set forth in the claims.

The presently claimed invention provides a positioning apparatus for precisely positioning under a condition that a drive element is provided directly on an end of the base and the stiffness of the slider itself in the yawing direction is low. On the contrary, the two dimensional drive system according to Yanagisawa does not include the above condition.

More specifically, in Yanagisawa, when the drive element is located on a specific position (for example, when a Y-stage is driven so that a ball screw for driving in the Y-direction

is shifted to the end of the X-direction), at first glance, the configuration of Yanagisawa facially appears to be similar to the configuration of claim 1. However, the Y-rails 17 (corresponding to the guide elements) or the Y-ball screw 24 (corresponding to the drive element) are not directly fixed to the base. The Y-rails 17, or the Y-ball screw 24) are directly fixed on the X-moving beam 16, and the X-moving beam 16 is movably provided on the base 10 via the X-fixed guide 12 and the moving blocks 32. Since the X-moving beam 16 is not rigid, the stiffness is low. Also, the Y-moving beam 18 is not directly guided by the Y-rails 17 and the moving blocks 32, but instead is connected via the top table 42, the X-rails 19 or the moving blocks 32. Then, the stiffness of the Y-moving beam 18 in the yawing direction is not as good as in the present invention.

According to the configuration of claim 1 as currently set forth, since the guide elements and the drive element are directly provided on the base, and the stiffness of the slider in the area wherein the drive element is provided is higher than the stiffness of the slider in the area wherein the drive element is not provided, even if the stiffness of the slider itself is low. Thus, with the presently claimed invention, it is possible to improve the stiffness in the yawing direction to accurately position with a light-weight device.

For at least any of the above reasons, Yanagisawa fails to anticipate claims 1-11 and 15.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment Under 37 C.F.R. § 1.111
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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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